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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,337	03/29/2004	Bill J. Peck	10040506-1	5083

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EXAMINER

FORMAN, BETTY J

ART UNIT	PAPER NUMBER
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1634

DATE MAILED: 11/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/813,337

Applicant(s)

PECK ET AL.

Examiner

BJ Forman

Art Unit

1634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 17-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Art Unit: 1634

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I in papers filed 11 September 2006 is acknowledged. The traversal is on the grounds that it would not be undue burden to examine the claims of all groups I-V. However, it is maintained that undue burden would be required to examine the claims of groups II, III, IV and V along with claims of group I as evidenced by the fact that the claims of groups I, II, III, IV and V have acquired a separate status in the art as recognized by their different classifications as recognized by their divergent subject matter and because a search of the subject matter of invention I is not co-extensive with a search of inventions II-V.

The requirement is still deemed proper and is therefore made FINAL.

Claims 17-27 are withdrawn from consideration.

Claims 1-16 are under prosecution.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 10 and 11 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 10 and 11 are indefinite in Claim 10 because the claim depends on Claim 10 and hence do not further limit the Claim. The claims are further indefinite because it is unclear what embodiment of the invention is further defined by the flow rate.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-9, 12 and 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Anderson et al (U.S. Patent No. 5,186,824, issued 16 February 1993).

Regarding Claim 1, Anderson et al disclose a method of producing an array of at least two different polymeric ligands (e.g. oligonucleotides synthesized on a solid support (e.g. particle, membrane, disc Column 6, lines 49-56) the two different sequences being e.g. product and failed sequences, Column 20, lines 10-25).

Anderson et al disclose the method comprising contacting a blocked monomer at first and second locations having functional groups (e.g. cpg supports having the first monomer attached, Column 19, lines 55-58) under conditions sufficient for the monomer to covalently bond to the surface, removing blocking groups to generate a function group and reiterating the steps to produce the array of at least two ligands (Column 19, line 55-Column 20, line 50). Anderson et al further teach the method wherein the solid supports are exposed to reagents sequentially wherein the reagents are kept separate based on density (Column 5, lines 3-38 and Column 6, lines 13-36) forming a liquid-liquid interface such that the solid support is not exposed to a triple phase interface (Column 12, lines 28-67 and Fig. 2A-2D).

While the reference does not use the term “array”, the term is defined by dictionary.reference.com as “a larger group, number or quantity of people or things”. Anderson et al teach production of a plurality of oligonucleotides attached to cpg substrate (“1. Oligonucleotide Synthesis”, Columns 19-22 and Column 24, lines 5-35). Therefore, the reference teaches production of an array as claimed.

Art Unit: 1634

Regarding Claim 2, Anderson et al disclose the method wherein the functional group generation comprises sequentially contacting at least a portion of the surface with a plurality of liquids (Column 6, line 57-Column 7, line 14).

Regarding Claim 3, Anderson et al disclose the method wherein the different liquids include at least an oxidizing liquid and a deblocking liquid (Column 13, line 59-Column 14, line 11 and Column 19, line 55-Column 20, line 50).

Regarding Claim 4, Anderson et al disclose the method wherein the liquids further include a wash liquid (Column 13, line 59-Column 14, line 11 and Column 19, line 55-Column 20, line 50).

Regarding Claim 5, Anderson et al disclose the method wherein the different liquids further include a capping liquid (Column 13, line 59-Column 14, line 11 and Column 19, line 55-Column 20, line 50).

Regarding Claim 6, Anderson et al disclose the method wherein the sequentially applied liquids have a different density (Column 6, line 57-Column 7, line 14).

Regarding Claim 7, Anderson et al disclose the method wherein the sequentially applied liquids have a different density greater than zero (i.e. increasing density, Column 6, line 57-Column 7, line 14).

Regarding Claim 8, Anderson et al disclose the method wherein the sequential contact is by displacing a previous liquid with an immediately subsequent liquid (Column 7, line 60-Column 8, line 3 and Column 12, lines 28-67 and Fig. 2A-2D).

Regarding Claim 9, Anderson et al disclose the method wherein displacing comprises flowing the subsequent liquid across the surface to produce a stratified liquid interface that moves across the surface (Column 12, lines 28-67 and Fig. 2A-2D).

Regarding Claim 12, Anderson et al disclose the method wherein step (b) is preformed in a flow cell i.e. internal space for fluid flow so as to contact solid support (Column 5, lines 20-38).

Art Unit: 1634

Regarding Claim 14, Anderson et al disclose the method wherein functional group generation comprising contacting the surface in a flow cell with a plurality of different liquids in the following order: oxidizing, wash, daglock, wash wherein the liquids are contacted sequentially by displacing the previous liquid (Column 7, line 60-Column 8, line 3 and Column 12, lines 28-67 and Fig. 2A-2D and (Column 19, line 55-Column 20, line 50).

Regarding Claim 15, Anderson et al disclose the method wherein the sequential contact is by displacing a previous liquid with an immediately subsequent liquid (Column 7, line 60-Column 8, line 3 and Column 12, lines 28-67 and Fig. 2A-2D).

Regarding Claim 16, Anderson et al disclose the method further comprising contacting a capping liquid which is contacted with the surface between an oxidizing liquid and deblocking liquid (Column 19, line 55-Column 20, line 50).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al (U.S. Patent No. 5,186,824, issued 16 February 1993).

Regarding Claim 10-11, Anderson et al disclose a method of producing an array of at least two different polymeric ligands (e.g. oligonucleotides synthesized on control pore glass, the two different sequences being e.g. product and failed sequences, Column 20, lines 10-25).

Anderson et al disclose the method comprising contacting a blocked monomer at first and second locations having functional groups (e.g. cpg supports having the first monomer attached, Column 19, lines 55-58) under conditions sufficient for the monomer to covalently

Art Unit: 1634

bond to the surface, removing blocking groups to generate a function group and reiterating the steps to produce the array of at least two ligands (Column 19, line 55-Column 20, line 50).

Anderson et al teach the method wherein the solid supports are exposed to reagents sequentially wherein the reagents are kept separate based on density (Column 5, lines 3-38 and Column 6, lines 13-36) forming a liquid-liquid interface such that the solid support is not exposed to a triple phase interface (Column 12, lines 28-67 and Fig. 2A-2D).

Anderson et al further teach the method wherein the flow rate is controlled and monitored during passage of reagents (Column 5, lines 25-27; Column 14, lines 44-53 21) and further teach that it is important to control the flow rate because some synthesis steps take more or less time than other steps and because reagent waste resulting from excess use of reagents is expensive (Column 21, lines 30-65) but they are silent regarding specific flow rates. However, the reference clearly suggests that the flow rate is adjusted to maximize reagents and synthetic step. Therefore, It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to adjust the flow rate during the synthesis steps of Anderson to obtain optimal flow rates (e.g. about 1-20 cm/x). One of ordinary skill in the art would have been motivated to do adjust the flow rate so as to maximize syntheses reaction with minimal waste of reagents as desired by Anderson et al (Column 21, lines 30-65).

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al (U.S. Patent No. 5,186,824, issued 16 February 1993) in view of Blanchard (U.S. Patent No. 6,384,210, issued 7 May 2002).

Regarding Claim 13, Anderson et al disclose the method comprising contacting a blocked monomer at first and second locations having functional groups (e.g. supports having the first monomer attached, Column 19, lines 55-58) under conditions sufficient for the monomer to covalently bond to the surface, removing blocking groups to generate a function

Art Unit: 1634

group and reiterating the steps to produce the array of at least two ligands (Column 19, line 55-Column 20, line 50). Anderson et al do not teach monomers addition using a pulse-jet. However, pulse-jet addition of monomers during multi-step synthesis of polymers was well known in the art at the time the claimed invention was made as taught by Blanchard.

Blanchard teaches a similar method of oligonucleotide synthesis on a solid support wherein the support is placed in a flow cell for all reaction except for monomer addition (Column 4, lines 3-22). Blanchard teach the monomer addition using a pulse jet provides precise, discrete and small volumes of monomer are added to a support (Column 5, lines 41-56) whereby multiple and different monomers dispensed simultaneously thereby greatly reducing the time of array synthesis (Column 11, lines 48-61).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the pulse-jet dispenser of Blanchard to the monomer addition step of Anderson et al. One of ordinary skill in the art would have been motivated to do so for the expected benefit of simultaneously providing multiple and different monomers precisely at, discrete and small locations on to the support (e.g. membrane/disc) of Anderson et al with greatly reduced time of array synthesis as taught by Blanchard (Column 5, lines 41-56 and Column 11, lines 48-61).

Conclusion

9. No claim is allowed.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741. The examiner can normally be reached on 6:00 TO 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.


Art Unit: 1634

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.


BJ Forman, Ph.D.
Primary Examiner
Art Unit: 1634
November 21, 2006